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OBITUARY

Ivana Weygand-Đurašević (1952 – 2014)

Professor Ivana Weygand-Đurašević, a distinguished Croatian biochemist, an inspiring teacher for many generations of students at the University of Zagreb, and a member of the Croatian Academy of Sciences and Arts, passed away on April 7, 2014. With her premature death, scientific community in Croatia and abroad lost a very dedicated and thoughtful scholar and colleague.

Ivana Weygand-Đurašević was born on June 15, 1952 in Osijek, Croatia. She graduated in 1975 from the Chemistry Department, Faculty of Science, University of Zagreb. In 1978, she received Master of Science degree in Molecular Biology, and in 1981 she earned a doctoral degree in Chemistry (Biochemistry) from the University of Zagreb under supervision of Prof. Željko Kućan. In 1988, she became a faculty member at the Faculty of Science, firstly appointed as an associate professor, followed by the assistant professorship in 1995, and the full professorship in 2000. She was elected as Full member of the Croatian Academy of Sciences and Arts in 2012.

Ivana Weygand-Đurašević was a highly dedicated scientist with strong motivation to establish an internationally recognized group at the Faculty of Science. She devoted her scientific life to broadening our understanding of biochemical principles of protein biosynthesis. From the early steps in her scientific journey to the very last days, she was involved in studies related to this fundamental cellular process. The focus was on transfer RNA (tRNA) and aminoacyl-tRNA synthetases (aaRS), a group of enzymes that covalently couple tRNAs with cognate amino acids, and thereby establish the genetic code. At the beginning, during her master and doctoral studies in Prof. Kućan's Laboratory, Ivana used electron spin resonance (ESR) to study tRNA conformational changes induced by interactions with several small ions and macromolecules that encounter tRNA during protein biosynthesis. This was followed by the post-doctoral training in Dieter Soll's laboratory at Yale University where her long-life interest in aminoacyl-tRNA synthetases has been cemented. Work in one of the top laboratories in the field enabled her to participate in highly motivating projects such as elucidation of the mechanism by which induced fit conformational transition may control substrate selection in aaRS:tRNA complexes. During that time she became highly experienced in gene cloning, protein engineering, and genetic methods that analyzed aaRS:tRNA interactions *in vivo*. It must have been very fascinating for Ivana, who was trained as a chemist and biophysicist, to acquire the expertise to manipulate with *in vivo* systems. Later in her work, she was always eager to combine *in vitro* and *in vivo* approaches trying to complement quantitative analysis of biological phenomena with their biological relevance. Her independent career at the Faculty of Science was dedicated to seryl-tRNA synthetase, an enzyme responsible for Ser-tRNA^{Ser} synthesis and thereby incorporation of serine into proteins. This fundamental process has been studied in her group in all three domains of life (bacteria, yeast, plants and

metanogenic archaea). Alongside, she and her associates explored non-canonical roles of these enzymes beyond protein synthesis. Among her major contributions in the field were elucidation of the structure and mechanism of atypical seryl-tRNA synthetase from methanogenic archaea and discovery of a novel group of enzymes that aminoacylate carrier protein instead of tRNA and therefore presumably participate in non-ribosomal peptide synthesis. These findings were published in the top scientific journals, *The EMBO Journal* and *The Proceedings of the National Academy of Sciences of the United States of America*, demonstrating their importance and relevance.

An international impact of her research and connections with top scientists at leading international institutions was always very important to Ivana. As a young scientist she was gaining expertise in many highly established international laboratories and worked with many distinguished scientists in the field of translation (University of Aarhus, Denmark, Prof. B. F. C. Clark; Institut de Biologie Moleculaire et Cellulaire du CNRS, Strasbourg, France, Profs. J.-P. Ebel and F. Fasiolo; European Molecular Biology Laboratory, Grenoble, France, Prof Leberman). She also spent six years at Yale University in Dieter Soll's group, three as a postdoctoral associate (1984–1987) and three as a visiting professor (1990–1993). During her independent career, she established numerous international collaborations (Dieter Soll, Yale University, US; Nenad Ban, ETH, Zürich, Switzerland; Mike Ibba, The Ohio State University, US; Omar Orellana, University of Chile, Santiago, Chile; Gregor Anderluh, National Institute of Chemistry, Ljubljana, Slovenia) and was awarded many international grants (NIH/FIRCA, SCOPES, ICGEB) and highly competitive national grants (UKF and Croatian Science Foundation). In 2006 she received the National Annual Science Award of the Republic of Croatia for the achievement in aminoacyl-tRNA synthetase research. She published 64 papers in the journals cited in the *Current Contents* (CC) database, 4 book chapters and 5 papers in non-CC journals.

Ivana Weygand-Đurašević taught several courses at the undergraduate, graduate and doctoral programs of chemistry and molecular biology at the Faculty of Science. As a committed teacher, she introduced many generations of chemistry students to the amazing world of biochemistry. She was also strengthening the understanding of the biochemical principles underlying the flow of genetic information for many students of molecular biology. Prof. Weygand was well known for her almost pioneering courses on gene cloning and methods of protein engineering taught at doctoral studies of chemistry and molecular biology. She was highly esteemed by students because of the comprehensive lectures updated with the latest scientific achievements in the field, great scientific career, and deep care for her students. Her excellent scientific reputation attracted numerous talented students of chemistry and molecular biology to her laboratory. Many of them made very successful independent scientific careers in Croatia and abroad.

As a distinguished faculty member she served as chair of Division of Biochemistry, Faculty of Science, University of Zagreb (1999–2013), vice-dean for science, Faculty of Science, University of Zagreb (2006–2010), and chair of Graduate School of Chemistry, Faculty of Science, University of Zagreb (2005–2006). She was also a liaison officer for International Centre for Genetic Engineering and Biotechnology (1998–2005), a president of IAESTE Croatia (International Association for the Exchange of Students for Technical Experience) (1997–1999), and a member of the Committee for ethics in science and higher education of the Republic of Croatia (2006–2010). Ivana Weygand was a member of Editorial Board for *Croatica Chemica Acta* since 2000. Recently, she was selected for Editorial Board of the highly distinguished journal *The Journal of Biological Chemistry*.

Ivana Weygand-Đurašević made a huge impact on Croatian biochemistry in general. She inspired many talented young students and colleagues at home University, at the Institute Rudjer Bošković and whole Croatian (bio)chemical society. She was always eager to help younger scientists and students with recommendation and advice. Under her supervision 11 Ph.D. Theses and more than 30 Diploma Theses were completed. She served on a number of Ph. D. or Diploma committees. As a long-term head of Biochemistry program at the Graduate School of Chemistry, Faculty of Science, University of Zagreb she actively participated in education of many nowadays eminent Croatian biochemists.

Ivana taught me that science is a tough job. She was a tough woman doing tough job at tough place. Once she told me: "I never expected this journey to be an easy one." She was never complaining; she just kept going. And she did it extremely well. I think this is her legacy for all of us who grew up scientifically by her side.

Ita Gruić Sovulj